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| ART UNIT | PAPER NUMBER |
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| 1753 | |

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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 10/058,963 | Applicant(s) Andra Guttman et al. |
|---|---|---|
| | Examiner J. STARSIAK | Group Art Unit 1753 |

*—The MAILING DATE of this communication appears on th cover sheet beneath th correspondence address—*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

☒ Responsive to communication(s) filed on 13 May 2003.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

**Disposition of Claims**

☒ Claim(s) 21-32 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 21-32 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

**Application Papers**

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119 (a)-(d)**

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

**Attachment(s)**

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 5 & 6

☐ Interview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other _____

**Office Action Summary**

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode.

Claims 28 and 29 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 28 and 29 recite "applying a pressure" and "applying a vacuum", respectively. The only disclosure of these embodiments in the specification is on page 7, lines 5 to 7, i.e., "The migration field my be created by an electric potential, a pneumatic source, a vacuum source, or a magnetic source, or other field source. There is no disclosure of the equipment necessary to the claimed methods or identification of known equipment which can perform the claimed methods.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 23-26, 31, and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 23 recites, "The method of claim 21 *further comprising* synchronizing the collecting and interrupting with the mobility of the analyte.". The claim fails to recite any sequential relationship between this step and the steps recite in claim 21. Claim 24 recites "The method of claim 24 recites, "The method of claim 21 *further comprising* analyzing the analyte prior to collecting. The claim fails to recite all complete sequential relationship between this step and the step recited in claim 21. While the claim recites that this step is "prior to collecting the collecting step", there are no sequential relationships recite between this step and the three steps prior to the collection step recited in claim 21. Both claims 25 and 26 recite, "wherein injecting the sample includes...". There is no "injecting the samples step" recited in claim 21, i.e. lack of antecedent basis. Claim 31 recites, "The method of claim 21 wherein repeatedly interrupting the migratory field includes adjusting *a potential within the separation the separation pathway*. The meaning of the term "a potential" is unclear. The examiner cannot find any description in the specification corresponding to this limitation. MPEP 608.01 (o) states: "The meaning of any term used in any of the claims should be apparent from the descriptive portion of the specification with clear disclosure as to its import...". Claim 32 recites, " The method of claim 21 *further comprising* establishing the predetermined time interval as a function of a composition of the separation pathway.". This claim is indefinite for two reasons. First, there are no sequential

relationships recited between this step and the steps recited in claim 21. Second, the underlined portion of the claim is incomprehensible. The examiner cannot find any description of this limitation in the specification.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 21-27 and 30-32 rejected under 35 U.S.C. 102(b) as being clearly anticipated by Wu & Frenz.

The following rejection is made insofar as the claims are definite. Wu & Frenz teaches [page 531, left-hand column]: " In our study, we optimized a complex tryptic map of recombinant human growth hormone (rhGH) and collected peaks automatically using a computer-controlled commercial instrument.". Wu & Frenz teaches [page 531, center column]: "We performed CE separations using a Hewlett-Packard HP$^{3D}$ CE system...with a built-in UV diode array detector and DOS windows-type, data-analysis software...The CE system's sample tray can be used as a fraction collection system, and the system's software can define any vial in the sample tray as a collection vial. After selecting a desired peak or migration time widow, we used the following peptide fraction procedure: First, the system stopped the voltage and using the sample tray, changed the outlet buffer vial to a collection vial. The system's built-in air pump applied 50-mbar pressure on the outlet vial for 40 s to elute the desired peptide. After the desired peak was eluted, the system changed the vials back and reapplied the high voltage to elute the slower migrating peptides".

Claims 21-27, 31, and 32 rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rose & Jorgenson.

The following rejection is made insofar as the claims are definite. Rose & Jorgenson teaches [Summary]: "An instrument is described which is capable of collecting fractions from a capillary zone electrophoresis apparatus.". Rose & Jorgenson teaches [Introduction, lines 12 and 13]: "CZE has been applied to separation of drug metabolites, amino acids, and peptides, and proteins.". Rose & Jorgenson teaches [Introduction, lines 18 to 26]: "In order to take advantage of these characteristics of CZE, biomolecules must be collected as they migrate from the end of the capillary, similar to the collection of fractions in liquid chromatography. However, the process of fraction collection in CZE is fundamentally different from that in liquid chromatography. The end of the capillary must stay in contact with buffer, which is in contact with an electrode, during fraction collection in order to maintain the electric field which migrates the zone out of the end of the capillary. Also the electric field applied during electrophoresis must be interrupted or stopped when moving the capillary from fraction to fraction.". Rose & Jorgenson teaches [Experimental, lines 3 to 6]: "The fraction collector consists of three digital linear actuators (DLAs) which allow precise movement of the capillary...and of the collection tray...". Rose & Jorgenson teaches [Procedure, lines 10 to 55]: "A series of electrophoretic runs was done in order to obtain a reproducible sample zone migration time (i.e. the time required for the sample to migrate from the inlet end of the capillary to the detector). During these "calibration" runs, no fraction collection occurred and the end of the capillary remained in the

buffer slot reservoir (BR). The zone migration time was determined by arbitrarily marking the beginning and the end of the zone (zone start and stop times, respectively), which was displayed as a peak on the computer screen. Computing the statistical moments of the peak between the zone start and stop times gave the migration time (first statistical moment) of the zone. Once a reproducible migration time had been achieved, the zone start and stop times were used to signal the beginning and end of the zone during fraction collection. However, in order to use these times for fraction collection, they were modified to account for the additional time required fro the sample zone to migrate from the detector to the outlet end of the capillary. Since zone migration time is linearly proportional to capillary length, the zone start and stop times were multiplied by the factor L/l, where L is the overall capillary length and l is the length from the inlet end to the detector window (a factor of 1.5 was used throughtout the study). The result established two times: (1) the time when the beginning of the zone would arrive at the outlet end, and (2) the time when end of the zone would migrate from the outlet end. These two times, the collection start and stop times, respectively, were used by the assembler subroutine to determine when the fraction collector would move from the slot buffer reservoir (BR) to the collection cone (CC) in order to collect the fraction...The electrophoretic run for collecting fractions was initiated as stated above. When the timer count equaled a collection start time, the outlet end of the capillary was moved to a collection cone by the sequence of steps outlined in the Instrumental Control section. The entire transfer took less than 500 ms and during most of that transfer time, current flowed through the grounded buffer held in the tapered glass capillary (TC). During the

collection, species in the end of the capillary migrated out of the capillary into the buffer of the collection cone. When the timer counter equaled the collection stop time, the end of the capillary was moved back to the slot buffer reservoir.".

Claims 21-27, and 30- 32 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Allington et al.

This rejection is made insofar as the claims are definite. Allington et al. teaches [col. 14, line 64 to col. 15, line 43]: "Assume observation starts just before sample is to be collected in cup 431. Initially the arm 450 is positioned as shown at A in FIG. 7 with the capillary tube 30 above well A in sample cup 430. The high voltage has already been turned off by a conventional programmer which is not shown. Lifting and turning mechanism 404 lowers the arm into the position indicated as 404 in FIG. 7. This lowers the capillary tube 30 into the electrolyte in well A of sample cup 430. This is called the "collection" position. After the capillary tube has been lowered into the electrolyte in well A and electrical continuity has been established, the programmer turns the high voltage power supply on and electrophoresed and/or electro-osmosed material leaves the capillary tube 30 into the electrolyte in the collecting well. This material from the capillary tube contains the sample of interest. Solute in this material is trapped in the well, as it cannot pass through the semipermeable membrane at the bottom of the well. When the sample component of interest has completely eluted into the well, the programmer turns the power supply off. Then the lifting and rotating mechanism 404 raises the arm 460 to the position shown as A in

FIG. 7. Next, the lifting and rotating mechanism 404 rotates the support rod 470 into the position shown, rotating the arm 460 to the position shown in FIG . 14. The lifting and rotating mechanism 404 then lowers the arm 460, putting it into the position shown in phantom in FIG. 8, with the capillary tube being in position 30B where it dips into the electrolyte within carrier 411. This is called the "waste " position, and electrical continuity is re-established there. The programmer then turns the high voltage on and waste material between collected sample zones is eluted into the electrolyte 451 which later may be discarded. When the next zone or peak of desire sample to be collected is about to be eluted, the programmer turns the power supply off and then lifts arm 460, the indexing mechanism (not shown in FIG. 7) advances the carrier 411 by rotating a pinion against a rack 802 one sample cup's width towards the top of FIG. 14, the arm 460 is rotated so that it is in the position perpendicular to the carrier 411 such as in FIG. 13 and the arm 460 holding the capillary tube is re-lowered, this time into the next sample collecting cup 431. Then the programmer turns the high voltage on again. This pattern is repeated continuously.".

Claims 21-27 and 30-32 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Burd.

This rejection is made insofar as the claims are definite. Burd teaches [col.2, lines 66 to col. 3, line 17]: "The present invention functions by the relative motion of the cassette and the separation capillary with respect to each other. Thus, either of the two may be stationary while

the other is mobile, or both may be mobile, i.e., any rearrangement which causes the capillary segments to enter the current path one at a time in succession. In most applications, the most convenient arrangement will be one in which the separation capillary is stationary and the capillary segments are contained in a mobile cassette, particularly one with controlled motion, i.e. at a controlled or programmed rate. The cassette may also assume a variety of physical forms or shapes, with the type of translational motion selected accordingly. In the embodiment shown in FIG. 1, the cassette is circular in shape, with the capillary segments arranged radically and distributed around the cassette circumference. The cassette motion is accordingly a rotation motion in the direction of arrow 21 around an axis passing through the center of the circle perpendicular to the plane of the figure.". Burd teaches [col. 4, lines 1-17]: "In the embodiment shown in FIG. 1, it will be noted that the capillary segments 18 are spaced apart at intervals around the cassette 12. The external openings 40 of adjacent capillary segments are separated by portions of the solid external wall 41. In the arrangement shown, these intervening wall portions close off the separation capillary 11 and interrupt the current path whenever the capillary segments 18 are not in alignment between the separation capillary 11 and the outlet buffer reservoir 14. With the current path interrupted in this manner, the electrophoretic migration of solute species with the separation column 20 as well as all other portions of the apparatus is momentarily suspended while the cassette rotates further and brings the next capillary segment into position. Thus, no components of the sample are lost and the entire elution profile will be distributed among the various capillary segments in the cassette.".

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John S. Starsiak Jr. whose telephone number is (703) 308-1797. The examiner can normally be reached on Monday to Wednesday from 8:00 AM to 3:30 Pm and on Thursday and Friday from 8:00 AM to 12:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-93190.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

John S. Starsiak Jr.

28 June 2003